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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,359	08/13/2008	Jungi Kondo	2006_ 0423 A	3527

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EXAMINER	
NGUYEN, LEON VIET Q	
ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
03/26/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/575,359	KONDO ET AL.	
	Examiner	Art Unit	
	LEON-VIET Q. NGUYEN	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 January 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to communication filed on 1/22/10. Claims 1-18 are pending on this application.

Response to Arguments

2. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2, 4-11, and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vialle (EP1359684) in view of Walton et al (US20030125040).

Re claim 1, Vialle teaches a channel-estimating apparatus comprising:

an input unit (component 6 in fig. 4) operable to receive several pieces of channel information (the coefficients formed by component 5 in fig. 3) from a plurality of receivers (¶0025, each rake receiver in fig. 4 receives the coefficients from component 5), said plurality of receivers being operable to perform MIMO communication through a plurality of channels (fig. 1);

an estimating unit (component 22 in fig. 4) operable to collectively estimate statuses of a plurality of channels (¶0026, the channel estimation), the estimating unit collectively estimating the statuses in accordance with the several pieces of channel information received by the input unit (¶0025, the coefficients formed by component 5 in fig. 3), whereby estimation results are generated (¶0026, the channel estimation results from component 22); and

an output unit (component 26 in fig. 4) operable to output the estimation results (the output of component 22 in fig. 4) to the plurality of receivers (fig. 4).

Vialle fails to explicitly teach a plurality of receivers including a first receiver and a second receiver, wherein:

the first receiver performs a MIMO communication with a first transmitter through a first channel;

the second receiver performs the MIMO communication with a second transmitter other than the first transmitter though a second channel other than the first channel;

the first receiver receives signals from the second transmitter through a third channel other than the first channel; and

the second receiver receives signals from the first transmitter through a fourth channel other than the second channel.

However Walton teaches a plurality of receivers including a first receiver (254a in fig. 2A) and a second receiver (254r in fig. 2A), wherein:

the first receiver (254a in fig. 2A) performs a MIMO communication with a first transmitter (a22a in fig. 2A) through a first channel (the channel between 222a and 254a in fig. 2A denoted by the arrow);

the second receiver (254r in fig. 2A) performs the MIMO communication with a second transmitter other than the first transmitter (222t in fig. 2A) through a second channel other than the first channel (the channel between 222t and 254r in fig. 2A denoted by a different arrow);

the first receiver (254a in fig. 2A) receives signals from the second transmitter (222t in fig. 2A) through a third channel other than the first channel (the channel between 222t and 254a in fig. 2A denoted by a different arrow); and

the second receiver (254r in fig. 2A) receives signals from the first transmitter (222a in fig. 2A) through a fourth channel other than the second channel (the channel between 222a and 254r in fig. 2A denoted by the arrow).

Therefore taking the combined teachings of Vialle and Walton as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the feature of Walton into the apparatus of Vialle. The motivation to combine Walton and Vialle would be to enhance system capacity (¶0055 of Walton).

Re claim 2, the modified invention of Vialle teaches a channel-estimating apparatus wherein each of the plurality of receivers (106a-106n in fig. 2A of Walton) includes a plurality of antennas (252a-252r in fig. 2A of Walton) and a plurality of receiving units (254a-254r in fig. 2A of Walton), each of the plurality of receiving units being connected to a corresponding antenna of the plurality of antennas (fig. 2A of Walton), and wherein the several pieces of channel information represent received electrical power of a signal received by each of the plurality of receiving units (¶0258-¶0259 of Walton).

Re claim 4, the modified invention of Vialle teaches a channel-estimating apparatus wherein the estimating unit generates the estimation results for all of the plurality of channels (¶0026 of Vialle, component 22 in fig. 4 of Vialle).

Re claim 5, the modified invention of Vialle teaches a channel-estimating apparatus wherein the generated estimation results include individual pieces of estimation results (¶0025 of Vialle), a number of the individual pieces of estimation results being the same as a number of channels of the plurality of channels (¶0025 of Vialle).

Re claim 6, the modified invention of Vialle teaches a channel-estimating apparatus wherein each of the plurality of receiving units (component 2 in fig. 4 of Vialle) possesses weighting coefficients for use in weighting the received electrical power (component 25 in fig. 4 of Vialle), and wherein the estimating unit generates coefficients as the estimation results, the coefficients generated by the estimating unit corresponding to the weighting coefficients (¶0026 of Vialle).

Re claim 7, the modified invention of Vialle teaches a channel-estimating apparatus wherein said output unit (component 26 in fig. 4 of Vialle) feeds a coefficient set into said plurality of receivers (¶0026 and fig. 4 of Vialle), the coefficient set including the coefficients (¶0028 of Vialle).

Re claim 8, the modified invention of Vialle teaches a channel-estimating apparatus wherein the coefficients included in the coefficient set correspond in number to all of the plurality of antennas possessed by all of the plurality of receivers (¶0028 of Vialle).

Re claims 9 and 10, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 1.

Re claim 11, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 2.

Re claim 13, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 4.

Re claim 14, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 5.

Re claim 15, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 6.

Re claim 16, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 7.

Re claim 17, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 8.

Re claim 18, the modified invention of Vialle teaches a communication system wherein the MIMO communication is made through antennas possessed by at least two receivers of the plurality of receivers (rake receivers in fig. 4 of Vialle).

5. Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vialle (EP1359684) and Walton et al (US20030125040) in view of Aldajani et al (US7415285).

Re claim 3, the modified invention of Vialle fails to teach a channel-estimating apparatus wherein the estimating unit divides the received electrical power of the signal received by each of the plurality of receiving units by a predetermined electrical power value, to thereby generate the estimation results.

However Aldajani teaches dividing a received electrical power by each predetermined electrical power value (col. 2 lines 43-46, the ratio of the predicted power fading divided by the estimated power fading), thereby generating estimation results (col. 2 lines 43-46). Although Aldajani teaches power fading, one of ordinary skill in the art would have found it obvious to first calculate the power before the power fading and use those values to perform channel estimation.

Therefore taking the modified teachings of Vialle and Walton with Aldajani as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the feature of Aldajani into the apparatus of Vialle and Walton. The motivation to combine Walton, Aldajani and Vialle would be to reduce error variance (col. 1 lines 66-67 of Aldajani).

Re claim 12, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 3.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON-VIET Q. NGUYEN whose telephone number is (571)270-1185. The examiner can normally be reached on Monday-Friday, alternate Friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Q Nguyen/
Examiner, Art Unit 2611

/David C. Payne/
Supervisory Patent Examiner, Art Unit 2611